

1 how long a trader would keep his bid out there?

2 A. It could be one factor among many, yeah.

3 Q. Because you're less likely to lose money
4 if your bid is way off the bid and offer?

5 A. I'm not sure that's true. I mean,
6 presumably these were not dumb traders, and
7 presumably they were profit motivated as well, so
8 they had their reasons for being there.

9 Q. Yes, but if the price is 500, and somebody
10 bids to buy eight ticks below the price, he's not
11 going to get hit unless the market moves eight ticks;
12 right?

13 A. Right. If there's other orders ahead of
14 you, you're not going to get hit. Not immediately,
15 anyway.

16 Q. Right. So there's a lot less risk than
17 someone who bids at the market or one tick below
18 market?

19 MR. RIDNOUR: Objection to form. Is that
20 a question?

21 A. Yeah, I mean, it depends on what one means
22 by "risk." That's really hard to assess without
23 knowing what somebody's objectives are.

24 Q. (By Mr. Asche) Okay. There's a greater
25 chance of getting hit sooner than if somebody bids

1 way off the market?

2 A. Yeah. The more aggressive your prices,
3 the more competitive your prices -- you used the
4 phrase "greater risk of getting hit." Another way to
5 say the same thing is a there's a greater chance of
6 executing your trade, which, in fact, I've documented
7 in a stock market.

8 Q. And Moncada's bids were extremely
9 aggressive; right?

10 A. That's why it's all the more remarkable
11 that he had such low execution rates on orders that
12 we would normally expect to have high execution
13 rates.

14 Q. Well, some traders bid way off the market
15 and keep their bids out there, and Moncada bid at the
16 market and cancelled frequently. Is that fair to
17 say?

18 A. Those facts seem accurate, yes.

19 Q. In paragraph 27, you say: "Although
20 Moncada most often cancelled his orders quickly, they
21 were visible long enough to generate responses
22 from" --

23 A. I'm sorry, which paragraph are you
24 reading?

25 Q. Twenty-seven, I'm sorry, page 13.

1 A. I think you said it, but I missed it.

2 Okay, go ahead.

3 Q. "Although Moncada most often cancelled his
4 orders quickly, they were visible long enough to
5 generate responses from computer algorithm
6 operators." Do you see that?

7 A. Yes.

8 Q. Any experienced trader would know that
9 that's true; correct?

10 A. Certainly anybody who's been trading in
11 the markets recently should have an appreciation of
12 how quickly computers can respond.

13 Q. And you'd be surprised if Moncada didn't
14 know this?

15 A. I would be surprised if he didn't know
16 that.

17 Q. Okay. So when he placed an order and left
18 it on for two or four seconds, he was very well aware
19 that computer algorithmic traders could hit his bid?

20 MR. RIDNOUR: Objection; calls for
21 speculation on someone else's knowledge.

22 Q. (By Mr. Asche) You would expect that he'd
23 be aware of that?

24 A. It's a reasonable speculation, but it is a
25 speculation.

1 Q. And as you say, an algorithmic trader can
2 respond within two to three milliseconds; correct?

3 A. Yeah. The evidence is that the responses
4 can be that quick, yes.

5 Q. That the transmittal of the little zeros
6 and ones across the wires is a lot quicker than the
7 thumb or the forefinger?

8 A. Definitely. Computers can respond faster
9 than humans can respond. I think the evidence shows
10 that.

11 Q. And in October of 2009, a significant
12 portion of the market was being -- trading was being
13 done algorithmically?

14 A. I don't have direct evidence on percentage
15 at the CBOT, but in the markets in general, by 2009
16 there was already a large amount of algorithmic
17 trading.

18 Q. Okay. At the bottom of this paragraph 27
19 you say: "Human reactions to even the simplest
20 stimuli typically take about 200 milliseconds." Do
21 you see that?

22 A. Yeah. I mean, I'm quoting somebody else.
23 This is outside of my own expertise, but it was what
24 was reported.

25 Q. So Moncada, if he was -- you know, if he

1 had his morning coffee, could have cancelled his
2 trades in 200 milliseconds?

3 MR. RIDNOUR: Objection; calls for
4 speculation.

5 A. I don't think we can infer that from this.
6 I used the phrase there "even the simplest stimuli."
7 The paper that I'm quoting is not entirely fresh on
8 my mind, but I think they were measuring it for
9 really simple things, like how quickly can you detect
10 that a light comes on, something like that.

11 So anyway, my point is, you know, I'm not
12 sure a human could have reacted in a trading
13 environment. I'm not sure this tells us that a
14 trader could have reacted that quickly.

15 Q. (By Mr. Asche) Well, we're not talking
16 about reactions, are we?

17 A. I'm not sure.

18 Q. If Moncada had a plan to enter an order
19 and immediately cancel it before it could be hit, he
20 could do it in 200 milliseconds; correct?

21 MR. RIDNOUR: Objection; calls for
22 speculation.

23 A. I'm really not sure about that as I sit
24 here. You're getting beyond my expertise here.

25 Q. (By Mr. Asche) Well, this is your paper

1 here. You must have quoted this Kosinski for a
2 reason.

3 A. Indeed. The point was computers can react
4 more quickly than humans. That was the point I
5 wished to make.

6 Q. But I think you would agree that Moncada
7 could have reacted a lot more quickly than two or
8 four seconds?

9 A. Presumably.

10 Q. And sometimes he would leave the trade on
11 longer -- I mean the offer on longer; correct?

12 A. Yeah. Those were averages, yeah.

13 Q. Beginning on page 14, paragraph 30, you
14 discuss "sunshine" trading and "spoofing"; correct?

15 A. Yes.

16 Q. Sunshine trading is essentially -- I don't
17 want to misparaphrase, but sunshine trading is
18 trading with somebody, both of you have the same
19 amount of knowledge about the subject matter, or have
20 access to the same?

21 A. Yeah. The theories of sunshine trading
22 that are out there are based on the idea of a trader
23 who doesn't have any special information to motivate
24 their trade.

25 Q. Okay. If one trader is looking to buy

1 wheat and another trader is looking to sell upwards
2 of 200 contracts but only places an order of 20
3 contracts at a time, would that be an example of
4 sunshine trading?

5 A. Not necessarily. If you'd like, I can
6 clarify a little bit about the theory of sunshine
7 trading if that's useful.

8 Q. Well, I mean, in that circumstance, the
9 one doing the Iceberg trading is intentionally
10 concealing his full intentions; correct?

11 A. I don't think I agree, and maybe I can
12 clarify. The theory of sunshine trading is
13 essentially a theory of advertising. I'm not sure
14 that's exactly the right word, but it's essentially a
15 theory of telling the world that you would like to
16 complete a trade. "So I would like to buy. Wouldn't
17 somebody like to come and sell to me?" That's the
18 theory of sunshine trading.

19 Q. Right, but if you said, "I'd like to buy
20 20," and what you really mean is, "I want to buy
21 200," you're concealing something that's relevant to
22 the price of the contract; correct?

23 A. I mean, you're describing a hypothetical
24 here.

25 Q. Yeah.

1 A. That's not what I would expect from a
2 sunshine trader. From a sunshine trader I would
3 expect that if I wanted to trade 200, I would tell
4 the world I want to trade 200. The idea of sunshine
5 trading is to be transparent in your intentions in
6 hope of attracting counterparties.

7 Q. And Iceberg trading is, to some extent, is
8 not that?

9 A. Iceberg trading hides a portion of what
10 you're doing from the world, yes.

11 Q. But you wouldn't call Iceberg trading
12 spoofing?

13 A. Not necessarily.

14 Q. But it could be?

15 A. A spoofer, the theory of spoofing relies
16 on the world being able to see what you're doing, but
17 you're trying to fool the world. But that's the key
18 distinction between sunshine trading and spoofing.
19 So sunshine trading is honestly revealing what you
20 wish to do in hopes of attracting counterparties.
21 Spoofing is revealing with hope of deceiving the
22 world.

23 So anyway, to circle back, it's important
24 to a spoofing strategy that the world can see what
25 you did, because you're trying to fool them with --

1 you're trying to fool them by giving them some false
2 information.

3 Q. And the false information that you're
4 trying to give them in the example of spoofing that
5 you give is that you're -- you want to affect a
6 transaction at a price that is either higher or lower
7 than the bid or offer?

8 A. That could be one motivation for spoofing.
9 Certainly if you can -- if you're putting in spoof
10 buy orders because you wish to sell, then certainly
11 getting a better price on your sell would be one
12 motivation. Simply attracting more people so you can
13 sell with a smaller price concession could be
14 another.

15 Q. Typically a spoofer will place a
16 relatively small order off the market?

17 A. It's not --

18 MR. RIDNOUR: Can you tell me what you
19 mean by "off the market"?

20 MR. ASCHE: "Off the market" meaning
21 higher or lower than the current spread.

22 MS. DIAMOND: That's not a question.

23 A. It's not at all clear to me that that's
24 what a spoofer would do. A spoofer wants their
25 orders to be visible. So you'd -- like I said, they

1 want their orders to be visible. You know, a spoofer
2 is trying to fool the market. The rest of the market
3 would prefer not to be fooled. So in that sense it's
4 a bit of an arms race and not obvious what a
5 spoofer -- not obvious to me as somebody who doesn't
6 develop spoofing strategies -- what would be the best
7 way to try to fool the market. But you do need to be
8 visible to have an effect as a spoofer.

9 Q. (By Mr. Asche) Someone who enters an
10 Iceberg trade is, in effect, trying to fool the
11 market. He's concealing the volume that he intends
12 to trade?

13 MR. RIDNOUR: Objection to form.

14 A. I'm not sure I would agree with that. I
15 mean, they are withholding some information from the
16 market, but it's well understood on these markets
17 that trader would have the right to do this.

18 Q. (By Mr. Asche) Sure they have a right, but
19 the reason they do it is because they don't want the
20 market to know how much they want to buy or sell;
21 correct?

22 A. Yeah. Clearly you choose to not reveal
23 the full size because you would prefer that other
24 people didn't know the full size. So there's a
25 danger. There's a danger that others could use that

1 information against you.

2 Q. So you enter an order for significantly
3 less than the size you actually want to purchase?

4 A. Yeah. That is the Iceberg option, yes.

5 Q. And --

6 A. It displays less size than the total size
7 of your order.

8 Q. And that can have an effect on the price;
9 correct?

10 A. Yeah. I mean, presumably the person who
11 uses an Iceberg order is using it because they hope
12 that this will help them get a better price. But
13 again, there's nothing hidden about the existence of
14 Iceberg orders. If you're trading in these markets,
15 you need to be aware that Iceberg orders are part of
16 the market.

17 Q. It's a generally accepted way of
18 concealing your intentions?

19 A. You know, "concealing" is a little bit of
20 a pejorative term, and not every market allows
21 Iceberg orders, although I think these days most
22 markets do.

23 Q. In the example of spoofing you give in
24 paragraph 33, who are Hasbrouck and Saar?

25 A. Professors of finance, Hasbrouck at New

1 York University, Saar at Cornell University.

2 Q. You say: "A seller might post a small buy
3 order priced above the current bid in the hopes of
4 convincing other buyers to match or outbid." Do you
5 see that?

6 A. This must be paragraph 33, I take it?

7 Q. Yes.

8 A. Sorry, I went to page 33. Yeah, so they
9 say -- they give an example.

10 Q. Yes.

11 A. "A seller might post a small buy order
12 priced over the current bid."

13 Q. That's not what Moncada did.

14 A. No. This is an example.

15 Q. Okay, but that's the only example I gave;
16 correct?

17 A. Correct. It's the only example -- yeah,
18 the only example I quoted Hasbrouck and Saar on.
19 But, you know, the economics are clear, and they
20 mention also the necessity of the order being
21 visible. The economics are fairly clear. One does
22 this with the hope of attracting orders on the same
23 side from other parties.

24 Q. But Moncada's order is visible; correct?

25 A. Yes. As I understand it, the CME

1 disseminates, in realtime, the top ten levels of the
2 book.

3 Q. But the cancellation is also visible?

4 A. Correct.

5 Q. So he's not -- what the market sees is
6 he's ordered and cancelled?

7 MR. RIDNOUR: Object to form.

8 A. Correct. Someone who's paying attention
9 would see --

10 Q. (By Mr. Asche) A spoofer --

11 A. -- a cancellation.

12 MR. RIDNOUR: Let him finish answering his
13 question, please.

14 MR. ASCHE: I'm sorry.

15 Q. (By Mr. Asche) A spoofer leaves his buy
16 order above the market out there and allows it to be
17 hidden; correct?

18 A. That does not seem right to me. First of
19 all, it does not necessarily have to be above market.
20 In their example it's above market, but I don't see
21 that that's necessary.

22 Second, leaving it out there, it's
23 unclear. A spoofer does not want their order to
24 execute. If you leave it out there a long time, the
25 risk of execution goes up. So it's not at all clear

1 that a spoofer would leave it out there.

2 Also I think you asserted that a spoofer
3 would hide their size. I don't think the economics
4 would support the idea the spoofer would hide their
5 size. They want their order to be visible. They
6 want to fool the market.

7 Q. But what they're hiding is?

8 A. That their true intention is to trade the
9 opposite direction. That's the essence of spoofing.

10 Q. Okay. Now, paragraph 40. In paragraph 40
11 you state: "The negative coefficient estimates on
12 table 8 indicate that Moncada consistently completed
13 trades in the opposite direction of his large lot
14 orders, buying after he posted large lot sell orders
15 and selling after he posted large lot buy orders";
16 correct?

17 A. That's correct.

18 Q. And I think we've established earlier that
19 that trend is only -- that the lion's share of that
20 trading occurred in more than 20 seconds after the
21 large order?

22 A. That's true. The trading in the opposite
23 direction was predominantly somewhat after the large
24 orders were rendered.

25 Q. So, like, an hour later? Half hour later?

1 MR. RIDNOUR: Prior testimony speaks for
2 itself.

3 A. Yeah, I don't think I went more than an
4 hour in my analysis, but from several minutes to an
5 hour later, the bulk of it. There was evidence of
6 some trading in the opposite direction right away,
7 but the bulk of it was delayed some.

8 Q. (By Mr. Asche) And in paragraph 41 you
9 say: "The negative coefficient estimates are largest
10 when assessing trades over longer intervals of time."

11 A. That's correct, yes.

12 Q. And over longer intervals of time you
13 would expect that the effect of his large lot orders
14 would diminish, if not disappear?

15 MR. RIDNOUR: Object to form.

16 A. By "effect" you mean its effect on
17 liquidity and prices?

18 Q. (By Mr. Asche) Yes.

19 A. I'm not sure if there's actually a
20 distinction between "I can't tell" and "I think it
21 disappeared." It's more that "I can't tell." To
22 borrow a term from engineering's signal-to-noise
23 ratio, as more time goes by, more other stuff is
24 going on.

25 Q. But after 20 seconds, in the 10-second

1 interval after 20 seconds, you reported a coefficient
2 which you said was negligible; correct?

3 A. Yeah, which basically means I cannot tell
4 what's happening beyond there. I mean, it's one
5 thing to say, "I know when it dissipated." It's
6 another thing to say, "I can't tell if it
7 dissipated." The correct assessment would be, "I
8 can't tell. I can't tell if it's still there or
9 dissipated."

10 Q. Right, and if you can't tell, it's
11 unlikely that Mr. Moncada could have told?

12 MR. RIDNOUR: Calls for speculation.

13 A. Yeah, I mean, I don't know. With his
14 perspective and experience, I don't know, maybe he's
15 got better statistical tools than I do.

16 Q. (By Mr. Asche) But he would have to in
17 order to be able to make that judgment?

18 MR. RIDNOUR: Object to form.

19 A. Yeah. Again, that's speculation. I don't
20 know whether he perceived that he had a long-term
21 effect on the market or not. I mean, you know, I
22 can't know what's going on in his head. I can only
23 study what he did. That's why the report focuses on
24 his actions.

25 Q. (By Mr. Asche) By the way, do you know how

1 much money Mr. Moncada made or lost with this
2 strategy?

3 A. I've never carefully quantified his profit
4 or loss. It didn't seem to be a central issue to me.

5 Q. Well, if he started doing it in August and
6 lost money, would that have an effect on your
7 judgment?

8 MR. RIDNOUR: Calls for speculation.
9 Objection.

10 A. So obviously it is speculation, but, you
11 know, if somebody finds that banging their head on
12 the wall hurts, maybe they'd stop.

13 Q. (By Mr. Asche) Correct. In paragraph 48
14 you discuss Mr. Moncada's trading after large lot
15 order were executed.

16 A. Yes.

17 Q. And you say that: "By market close,
18 Moncada had reduced his position to 22 contracts";
19 right?

20 A. Can you point me to a specific phrase?

21 Q. At the bottom of paragraph 48.

22 A. Yes, I do see that, yes, but this was one
23 of the particular instances.

24 Q. Are there consequences to holding large
25 positions overnight?

1 A. Sure, there's additional risk overnight.

2 Q. In addition to risk, is there a cost?

3 A. One has to maintain margin, so it depends
4 on whether you think your interest rate on margin is
5 competitive or not. But one has to maintain margin.

6 Q. Do you know what the margin is on 400
7 contracts a week? Or was?

8 A. I would have to go to the Web site and
9 pull down the data on margins to see. I don't -- I'm
10 not carrying that by memory.

11 Q. Would you be surprised if it was over
12 \$2 million?

13 A. So how many contracts?

14 Q. 400.

15 MR. RIDNOUR: Calls for speculation.

16 A. Yeah. Again --

17 Q. (By Mr. Asche) Just give me an order of
18 magnitude. It's a lot of money.

19 A. There would be a fair amount of money in
20 carrying a large number of contracts overnight. One
21 does earn interest on one's margin, or one can earn
22 interest on margin. So how costly is it? Depends on
23 what else one might do with that money. You are
24 earning interest.

25 Q. It's certainly not unreasonable for a

1 trader to divest himself by the close.

2 MR. RIDNOUR: Calls for speculation.

3 A. I'll just agree that many -- there are
4 many traders who seek to go home flat. I mean, the
5 phrase "day trader," I don't know if Mr. Moncada
6 considered himself a day trader or not, but the
7 phrase "day trader" generally implies people who try
8 to be flat by the end of the day.

9 Q. (By Mr. Asche) Did you look to see what
10 Mr. Moncada's pattern was in terms of holding
11 positions overnight?

12 A. I never had data on his overnight
13 positions, so, you know, I can look at how much he
14 changed his position through a day, but I never had
15 data on his overnight positions. Even here when I
16 say his position was reduced to 22 contracts, how
17 that should actually be interpreted is his position
18 was 22 contracts higher than it was when I started to
19 track it earlier in the day.

20 Q. Okay. That's not what you say, though.
21 What you say is he "reduced his position to 22
22 contracts, almost identical to his position prior to
23 the large order execution."

24 A. I think if you read the full text, it will
25 be clear that I'm tracking changes in his position

1 since the beginning of the day. I'm sorry, I
2 shouldn't say beginning of the day since they've
3 pointed the day. I'd clarify that I don't have his
4 overnight positions.

5 Q. If you read the entire paragraph, just the
6 opposite seems clear to me. If you start with: "On
7 September 22, Moncada's position was 20 contracts
8 just before the execution of a large buy order."

9 A. So if you want to read the entire
10 paragraph, that needs to include the first sentence
11 of the paragraph.

12 Q. Go ahead, read it to yourself, and tell me
13 whether you want to change your prior answer.

14 A. Okay. No, I don't want to change.

15 Q. Your position, you're saying that when you
16 say he "reduced his position to 22 contracts, almost
17 identical to his position prior to the large lot
18 order," what you mean is that it was 22 contracts
19 higher than it was before the large lot order?

20 A. No.

21 MR. RIDNOUR: Object to form.

22 A. No. The first sentence should make clear
23 that I've tracked his accumulated buying and selling
24 since midnight, so the 22 contracts says 22 contracts
25 more than he had at midnight.

1 Q. (By Mr. Asche) That's not what it says.

2 A. We can quibble all we like, but the first
3 sentence counts. Every sentence counts. The first
4 sentence is there.

5 Q. Maybe I'm misreading it, but you're saying
6 just prior to the trade, he was --

7 A. The answer is yes.

8 Q. -- his accumulated trading was 20
9 contracts.

10 MR. RIDNOUR: Object to form.

11 A. The answer is yes, you were misreading it.

12 Q. (By Mr. Asche) Well, normally it's
13 traditional to wait for the question, then correct
14 the questioner.

15 A. Thank you.

16 Q. "Moncada's position (accumulated net
17 trading since midnight) was 20 contracts just prior
18 to the execution of a large buy order."

19 A. Correct.

20 Q. Then you say: "By market close, he had
21 reduced his position to 22 contracts, almost
22 identical to his position prior to the large order
23 execution."

24 A. Yes, that's what it says.

25 Q. Which means that his accumulated position

1 since midnight was almost the same as it was before
2 the large lot order.

3 A. That's correct.

4 Q. That's not what you said.

5 A. As I said, I believe you're misreading and
6 mischaracterizing what's there.

7 MR. RIDNOUR: Objection.

8 MS. DIAMOND: Objection.

9 MR. RIDNOUR: Asked and answered.

10 Q. (By Mr. Asche) In paragraph 52 you say
11 that: "Moncada rarely used the Iceberg function for
12 his large lot orders, thereby ensuring that they were
13 fully visible, but he cancelled most of his large lot
14 orders before they could execute." When you use the
15 term "could execute," do you mean before it was
16 physically possible or before they did execute?

17 A. "Did" would be the more accurate statement
18 there.

19 Q. You describe or -- you describe a
20 statistical model known as GARCH, G-A-R-C-H, all
21 caps.

22 A. Yes.

23 Q. Starting at paragraph 58. Could you, if
24 you will indulge me, pretend I'm -- don't pretend,
25 assume I'm an idiot. Would you kind of slowly give

1 me an elementary course in what that means?

2 A. Sure, and I recognize that it's somewhat
3 cumbersome, or -- what's the word I'm searching for?
4 It's a big bite if you're not familiar with these
5 tools. So in the footnote I describe what it's an
6 acronym for. I don't know if we need to repeat all
7 that, but the basic background is that a couple of
8 decades ago economists became aware that volatility
9 in financial markets was kind of episodic. You'd
10 have periods of turbulent markets, periods of calm
11 markets, and they wished to develop a statical
12 technique to study this phenomenon more carefully.

13 So these models, ARCH and GARCH, were
14 developed specifically to study how volatility
15 changes through time in financial data series. So
16 that's what they're used for. They're very, very
17 widely used.

18 I think I made reference to the unusually
19 large number of citations that these models have
20 received in the literature. So they're very -- they
21 are somewhat complicated, but they are industry
22 standard for studying this phenomenon.

23 Q. And the phenomenon is not -- is
24 volatility; correct?

25 A. Well, the GARCH model simultaneously

1 addresses both the level of a series and the
2 volatility of a series. So in particular, in here
3 we're interested in prices for December 2009 wheat
4 contracts, so the GARCH model allows us to study both
5 price levels and the volatility of prices
6 simultaneously. That's one of the nice features of
7 the model.

8 Q. And how does it do that?

9 A. I'm not sure how far I should try to dig
10 into the details. The technique is the estimation --
11 going a little bit by memory here because it's been a
12 little while since I read these papers as opposed to
13 implementing the models in a statistical package.

14 But as I recall, the estimation is by
15 something called maximum likelihood. So the model is
16 basically going to say we need to estimate some
17 parameters, and it's going to choose the parameters
18 so that the model best fits the data. I don't know
19 how deep you want to go into maximum likelihood
20 estimations.

21 Q. Not very.

22 A. Yeah, I suspected not. It is the industry
23 standard for modeling, in particular for modeling the
24 volatility of a financial series. It accommodates
25 this phenomenon that I indicated motivated the models

1 in the first place, that you tend to have periods of
2 volatile markets and periods of tranquil markets.

3 So the auto-regressive and moving average
4 parts that show up in the acronym there are for
5 accommodating, well, if the market's been volatile
6 recently, it's likely to still be volatile. So
7 controls for those things, and then you can put in
8 variables and ask, Well, having controlled for the
9 fact that a volatile market tends to stay volatile,
10 having controlled for that, do these variables affect
11 volatility? In essence, that's what the model is
12 being used for.

13 Q. Okay. And I think you've -- the numbers
14 of the effect on price are set forth in paragraph 62?

15 A. Uh-huh.

16 Q. Is that the result of the GARCH model to
17 the extent that it relates to price or volatility?

18 A. Well, we have estimates of both, so let me
19 refresh my memory. Let's see. Which paragraph?

20 Q. This is paragraph 62.

21 A. So 62, there's two equations at once, one
22 for the level of prices, one for the volatility of
23 prices. In paragraph 62 we're focusing on the one
24 for the level of price.

25 Q. Okay.

1 A. I should actually clarify, I said level of
2 price. It's actually price changes.

3 Q. Understood.

4 A. Yeah, price changes and volatility of
5 price changes.

6 Q. Okay. And then starting on paragraph 63,
7 as I read it here, it's discussing volatility;
8 correct?

9 A. Correct.

10 Q. What does that translate to? What would
11 the market be doing at a time when you say there's
12 increased volatility?

13 A. So volatility is basically movements of
14 prices around the average. So the average is not
15 terribly important for thinking about this. We could
16 pretend that the average price move is zero, and it
17 would just kind of simplify the discussion. So it's
18 basically how much variation do you have in prices
19 around the average.

20 So if you have a period of time where
21 prices are moving a lot, that's a volatile market.
22 If you have a period of time where prices are
23 tranquil, that's a nonvolatile market. So it's
24 basically measuring price movement in either
25 direction, up or down.

1 Q. And which schedule reflects that?

2 A. Where? Where are these estimates
3 themselves?

4 Q. Yes.

5 A. Which table? So the GARCH estimates are
6 reported in table 11.

7 Q. And could you just walk us through table
8 11? Just what are you showing here?

9 A. Sure. So let's focus on panel A. Again,
10 I think it's the most informative. This is for price
11 changes on the CBOT, and I'm looking at Moncada's
12 large orders and their effect. So there's two
13 equations and there's parameters that the model
14 estimates, parameters for each of the two equations.
15 So the first is for price changes. The second is for
16 volatility of price changes. Would you like to walk
17 through both?

18 Q. Yes.

19 A. So first, price changes, we're trying to
20 statistically explain price changes. The intercept,
21 the intercept just says that on average, the price
22 change is zero. Sometimes up, sometimes down, but on
23 average it's zero. So that's not terribly surprising
24 or informative.

25 Q. Even I understand that.

1 A. The next three, lag 1, 2 and 3, are price
2 changes. So here and in other markets there is a
3 little tendency for memory in the markets.

4 "Momentum" is a term traders sometimes use. So if
5 the price has been headed up, it recently has a
6 little bit of, statistically speaking, tendency to
7 keep going up. So I accommodate that -- control for
8 that, if you prefer -- by including three lags of
9 price changes. Positive coefficients indicate just
10 fair --

11 Q. These lags occur when?

12 A. By measuring everything at 10-second
13 intervals.

14 Q. From when?

15 A. Well, I'm using the whole -- the whole
16 database.

17 Q. You mean at any given 10-second interval?

18 A. On average throughout the database.

19 Q. The price tends to change in the direction
20 in which it's going by these coefficients?

21 A. Yeah. So in other words, there is some
22 evidence of momentum in this data set price momentum,
23 which is not a big surprise. We've seen it in other
24 data sets also. So I'm just controlling for that.
25 Those are the control variables.

1 Q. The new EM4 orders; right?

2 A. So what I've got for the rest of these is
3 the newly-entered large orders by Mr. Moncada. So I
4 like to look at his buy orders, his sell orders.
5 This is net. If he had both buy and sell, it's buy
6 minus sell for the period. So this is his net order
7 entry in the same 10-second interval, the prior
8 10-second interval, the second prior 10-second and
9 the third prior 10-second interval.

10 Q. Okay. And these coefficients, as I
11 understand it, translate to the price changes that
12 are in paragraph 62?

13 A. Correct. These are average price
14 movements associated with his new order entry,
15 measured in thousands of contracts.

16 Q. And the furthest out you measured, you
17 were able to measure any change that was after 20
18 seconds?

19 A. Yes. I experimented with going more than
20 30 seconds out, but there was nothing statistically
21 significant. In other words, the data couldn't tell
22 me whether there was anything there or it was all
23 just random beyond 30 seconds, the data. The data
24 only indicated a statistically reliable effect
25 through 20 seconds.

1 Q. All right. Now, volatility?

2 A. So now the volatility equation. So here,
3 volatility is basically how much movement there is in
4 prices around the average. The AR term and the MA
5 term are not terribly relevant for our purposes, I
6 don't think, other than I have controlled for the
7 well-known tendency for if the markets are being
8 volatile, they tend to remain volatile for a while,
9 so controlling for that.

10 And then the coefficient of interest is I
11 take the absolute value of Moncada's new orders, so
12 whether those were buy orders or sell orders, that's
13 a value. I'm just taking the positive, so whether it
14 was buy or sell, just how many new orders there were
15 on that. And the reason for that is that the price
16 itself should depend on buy versus sell pressure.
17 Volatility is not -- it's not particularly an issue
18 whether these were buy orders or sell orders, it's
19 just they're orders.

20 Q. Right.

21 A. So in any event, the point of relevance,
22 the data point of relevance is that coefficient on
23 his new orders, which is positive and statistically
24 significant. So the statistical method applied to
25 the data says that the markets became more volatile

1 at the time he entered his orders.

2 Q. The coefficient, as I read it, is .003.

3 A. Yes.

4 Q. What does that translate to? How would
5 you see that in movement, in volatility, in actual
6 prices?

7 A. So the volatility itself is the standard
8 deviation of price changes. So let me know if we
9 need to digress into what a standard deviation is.
10 But in any event, this basically says that the
11 standard deviation of prices change is increasing by
12 .3 per thousand contracts.

13 Q. .3 or --

14 A. I'm sorry, yes. Thanks for the
15 correction. .003.

16 Q. So would somebody looking at price changes
17 be able to detect a changing volatility?

18 A. I mean, essentially that's what I've done.
19 I'd used a statistical technique to look at it.

20 Q. You did it statistically, but if somebody
21 looked at --

22 A. If somebody was just observing?

23 Q. Was looking at the market, would it be
24 visible in the naked eyes, I guess?

25 A. Would they notice?

1 MR. RIDNOUR: Object; calls for
2 speculation.

3 A. It is speculation. No, it's not like
4 we're saying volatility tripled, you know. So I
5 would just say they'd have to be looking pretty
6 carefully to notice it.

7 Q. (By Mr. Asche) Well, I mean, is volatility
8 the difference between the bid and the ask?

9 A. No. That's the spread.

10 Q. Okay, that's spread. Volatility is the
11 difference between the price at one point in time and
12 the price at another point in time?

13 A. No, that's not --

14 MR. RIDNOUR: Object to form.

15 A. That's not a very good description of
16 volatility.

17 Q. (By Mr. Asche) Go ahead. I get in trouble
18 when I try to do your job. Go ahead.

19 A. So volatility is variability in a series.
20 So the particular series that I've got here is -- I
21 think I used the midpoint. I may need to refresh my
22 own memory on that. I think I used the midpoint of
23 the bid and the ask, but we can double-check that if
24 it becomes important.

25 In any event, I'm measuring prices in the

1 market. I'm measuring changes in prices. So
2 volatility is basically, well, were all the price
3 changes zero or were they all some other number? If
4 every price change is one tick, then there's no
5 volatility at all. Every -- if it was one tick every
6 time, no volatility at all. What we're measuring is
7 how much variation there is around the average. So
8 high volatility says well, you had some periods of
9 time when the price went up by a bunch or went down
10 by a bunch. Either direction is volatility. So it's
11 high volatility says you get more variation around
12 the average. Low volatility says little variation
13 around the average.

14 Q. I'm trying to determine what .003 means in
15 terms of whether it's a lot of variation or a little
16 variation.

17 A. I mean, it's a little bit in the eye of
18 the beholder. I would not describe this as a big
19 effect on volatility.

20 Q. That's what I was trying to see.

21 A. There's an effect there. It's
22 statistically distinguishable, but I would not
23 describe it as a big effect.

24 Q. Okay. And I take it you did not attempt
25 to look at actual price changes and sort of eyeball

1 it and see whether you could determine whether there
2 was greater or lesser volatility?

3 A. Well, I mean, the whole point of using a
4 state-of-the-art statistical model is that you don't
5 fall into the million traps that can be involved in
6 trying to eyeball data, that you use all the data,
7 you let the data speak, you let it speak in a
8 scientifically valid manner. So no, I didn't eyeball
9 it. I used scientifically valid methods.

10 Q. Okay. And by the way, panel A is for
11 which days?

12 A. I believe that was the full sample, so
13 that would run us from the date in early August
14 through the end of November.

15 Q. Okay. Do you know whether the volatility
16 for the eight days in question here was greater or
17 lesser than average?

18 A. I did not look at that. I don't think it
19 would be very informative. There's a lot of things
20 going on in these markets in eight days besides
21 Mr. Moncada's trades.

22 Q. So you don't know whether there was
23 increased volatility on those eight days?

24 A. What I can say is there was increased
25 volatility around the time that he entered his orders

1 for the full sample and for the eight days.

2 Q. Including the eight days?

3 A. Well, yeah, on those -- the same statement
4 holds for the eight days as for the full sample.
5 There was increased volatility around the time he
6 entered his orders. That's a different statement
7 from saying the market was more volatile on those
8 days than other days. Volatility increased around
9 the time he entered his orders.

10 Q. And you isolated those eight days?

11 A. Yes. Panel C is the eight charge days in
12 particular. Perhaps by coincidence, perhaps not, it
13 was exactly the same coefficient estimate, .003, for
14 the eight days as it was for the broader sample.

15 Q. And when you say increased volatility
16 around the time that he entered the orders --

17 A. Yes.

18 Q. -- what time lag are you talking about?
19 10 seconds?

20 A. Contemporaneous. During the same 10
21 seconds there was more volatility.

22 Q. So you have no idea whether 11 seconds
23 later there was more volatility?

24 A. I wouldn't say no idea, because after all,
25 a second later how much can things change? But to go

1 to your broader question, I'm not saying that
2 there's -- I can't say from this evidence that he
3 made the market more volatile all day long. I can
4 say he made it more volatile at the times he entered
5 his orders.

6 Q. Okay. And you don't know to what extent,
7 if at all, he profited from that increased
8 volatility?

9 A. I have not quantified his profits. What
10 kind of car is he driving? Sorry, shouldn't be
11 tongue-in-cheek, should I?

12 Q. You'd have to know when he bought the car,
13 I guess.

14 A. That, too.

15 Q. Bear with me, I'm almost -- as the lag
16 gets longer, it means I'm coming closer to the end.

17 A. Sounds like good news.

18 Q. If you can, go to table 12 -- or table 11.

19 A. I'm still there.

20 Q. Yes. What do panels B and D show?

21 A. So if you'd indulge me, just back up a
22 little bit.

23 Q. Sure.

24 A. I tried to assess both whether
25 Mr. Moncada's trades affected the level of crisis and

1 also whether it affected the spread. Different use
2 of the word "spread" here. Not the bid-ask spread,
3 but the spread between Chicago and Kansas City. And
4 so panels B and D are focused on the spread between
5 Chicago and Kansas City, the changes in that price
6 and the volatility of that spread price.

7 Q. Okay. Did you check to see whether
8 Mr. Moncada took advantage in some way of the
9 increased volatility in terms of entering spreads?

10 A. No. Nothing I did would be a direct
11 answer to that question.

12 Q. So you don't know whether Mr. Moncada
13 intended to increase the spread price?

14 A. No, I can't say whether he intended to
15 increase the spread price. I can say that he did --
16 overall, his trading behavior with regard to the
17 spread, was similar to his trading behavior with
18 regard to the CBOT itself, and that he also reversed.
19 On average, I traded in the opposite direction of his
20 large orders. That's as true for his spread
21 positions as it is for his outright positions.

22 Q. Do you know what percentage of the spread
23 positions were large orders?

24 A. I don't think I have that exact statistic.

25 Q. All right. What does table 12 show?

1 A. So on table 12 I'm conducting additional
2 analyses to assess whether Mr. Moncada's large orders
3 affected the market. So a regression analysis here,
4 a little simpler than GARCH, but, broadly speaking,
5 similar, letting the data speak, using all the data,
6 not eyeballing.

7 So in panel A, what we're assessing is
8 whether his large orders were associated with changes
9 in the bid-ask spread on the CBOT.

10 And in panel B, I'm assessing -- I
11 basically look at new order entry by everybody except
12 Moncada to see if his orders affect other people's
13 order submissions. And that's particularly relevant
14 because the spoofing strategy says that that's the
15 goal, actually. My understanding of the spoofing
16 strategy is that that's the goal, to get other
17 people -- to fool people and get them to enter other
18 orders.

19 Q. But for that strategy to work, you have to
20 enter your order at a time when the spoofing strategy
21 is effective.

22 MR. RIDNOUR: Object to form.

23 Q. (By Mr. Asche) You can't do it the next
24 day?

25 MR. RIDNOUR: Object to form.

1 A. I mean, the idea is to get -- the idea is
2 you put in a buy order to fool other people and get
3 them to put in buy orders also. Then you would sell
4 into it. That's my understanding of a spoofing
5 strategy.

6 Q. (By Mr. Asche) But you have to effect your
7 sell at a time when the market has reacted to your
8 spoof.

9 A. To be successful, yes. I mean, more
10 generally, if you fail to fool the market, it's not
11 going to work.

12 Q. Right.

13 A. But if you do attract more orders on the
14 same side, it's consistent with the idea that to some
15 extent you fooled the market. And that's actually
16 what panel B, the data, suggests, that around the
17 time that Mr. Moncada put in large orders, he
18 attracted net order entry on the same side around the
19 time that he did it.

20 Q. Did you determine whether or not
21 Mr. Moncada placed his large buy orders because he
22 expected more orders on the same side?

23 MR. RIDNOUR: Object; calls for
24 speculation.

25 MR. ASCHE: I asked whether he tracked it.

1 A. I controlled for lags of large orders by
2 the others with that sort of thing in mind, that it
3 was possible that he just tended to be putting in his
4 buy orders at times when other people were putting in
5 buy orders. So I've controlled for three lags of the
6 net orders of others to statistically control for
7 what they've been doing lately.

8 So the estimate that here -- is reported
9 here says that he affected other people's order entry
10 over and above anything that could be explained by
11 what the others were doing recently.

12 Q. (By Mr. Asche) Did you control for
13 Moncada's ability to predict what other people were
14 doing?

15 A. Again, I don't know what's going on in his
16 head. I can only look at the data and apply valid
17 techniques to it and say, "What does the data have to
18 say here?"

19 Q. If Moncada puts in a large lot buy order
20 and other people thereafter put in large lot buy
21 orders, one explanation is they're reacting to
22 Moncada's order; correct?

23 A. Correct.

24 Q. Another explanation is that Moncada
25 noticed a trend and thought that people would be

1 placing buy orders, so he put his in first; correct?

2 A. I think the lags at least partially
3 address that, if it's an issue of they've been doing
4 it lately.

5 Q. Not "they." He.

6 A. Now, again, it's all hypothetical, so he's
7 able to predict -- he's able to predict what others
8 are going to do and trades in front of them. I don't
9 know what was going on in his head. It's an
10 interesting idea. I think it runs into --
11 potentially runs into front-running sort of issues,
12 but I'm not the lawyer here. But anyway, I can't
13 know what was in his head. All I can say is around
14 the time that he entered his orders, there was
15 additional trading by -- additional orders by others
16 on the same side of his orders. That you would
17 expect from a successful spoofing strategy.

18 Q. It's also what you'd expect from a smart
19 trader?

20 MR. RIDNOUR: Object to form.

21 A. I don't know. I mean, there's a lot of
22 things a smart trader can do.

23 Q. (By Mr. Asche) Including predict the
24 direction of the market; correct?

25 A. It's possible that he might have been in

1 the business of trying to predict what others were
2 going to do.

3 Q. And by the way, it didn't happen every
4 time; correct? This is an average?

5 A. This is an average.

6 Q. So on average, people tended to buy after
7 he bought, but not always?

8 A. Yeah. Around the time he put in large
9 orders, there was an increase in buy orders by
10 others. That's what the data says. It's consistent
11 with the spoofing story, maybe a spoofing
12 interpretation. Might be possible to tell other
13 stories.

14 Q. And can you tell whether this increased
15 activity by others occurred before or after his
16 orders were cancelled?

17 A. What I've documented here is -- I'm sorry,
18 I should make sure to hear the last word of your
19 question. Now, what I've documented is
20 contemporaneous, in the same 10 seconds as his entry.
21 Now, since, on average, he cancelled within 2
22 seconds, most of the time this is going to be
23 within -- you know, but I can't give a specific
24 answer on how much of it was before he cancelled and
25 how much of it was after, because I used the 10

1 seconds here.

2 Q. And again, you don't know how -- you never
3 quantified how many trades he made in the opposite
4 direction within that 10-second period?

5 A. I think that is quantified. That was the
6 first row on the table that -- by "he" you mean
7 Moncada?

8 Q. Right.

9 A. Yes. On balance, he traded in the
10 opposite direction of his large orders, even within
11 the same 10 seconds.

12 Q. Where is that?

13 MR. RIDNOUR: Is it Table 8?

14 A. Yeah, you'd think I could find these
15 things in my own report. Table 8, that's the one.
16 Thanks. So yeah, each of the four panels has a
17 column of numbers under "coefficient," but the first
18 number in each of those columns is the...

19 Q. (By Mr. Asche) Oh, yeah, I mean, we went
20 through this, what was a very slight positive -- a
21 very slight coefficient.

22 A. Small.

23 Q. Small, yes.

24 A. Personally, I thought it was remarkable
25 that he was trading in the opposite direction of his

1 orders, even at the same 10 seconds that he placed
2 them, you know. But in any event, it's much smaller
3 than it is if you allow some time to go by. So I
4 think we've established that.

5 Q. Would you turn to your Appendix B.

6 A. Yes.

7 Q. All the way down.

8 A. Yes.

9 Q. What was the subject of your deposition in
10 Topfer?

11 A. Topfer was an estate planning and tax
12 case. I'm not an estate planning expert, but this
13 involved a tax shelter, where the tax shelter itself
14 involved --

15 Q. That was the California case?

16 A. No, no, this was in Texas -- the tax
17 shelter involved complicated option trading
18 strategies. I was involved in assessing the economic
19 viability of those option trading strategies that
20 were part of the tax shelter.

21 Q. And in the IPO Securities litigation?

22 A. So you're asking what was my role in the
23 case?

24 Q. Yes. For each of these, I'm asking.

25 A. Absolutely. I believe this is all public.

1 So the IPO litigation was related to initial public
2 offerings that occurred around 1999, 2000, the period
3 of the so-called "dot-com bubble," and I was involved
4 in assessing -- there were assertions made by the
5 other side that there had been so-called "laddering
6 trades," which the assertion was that these laddering
7 trades were done to artificially prop up the price of
8 the IPOs. So I was involved, essentially, in
9 assessing the validity of the evidence that the other
10 side presented in that case.

11 Q. Gonzales?

12 A. So Gonzales was the California Attorney
13 General case that was also a tax shelter case. This
14 one was not option trading. I'm trying to remember
15 if it was treasury bond or...

16 Q. Basically the economic viability of the
17 trade?

18 A. Yeah. Again, the underlying trading
19 strategy. The question was did that trading strategy
20 make sense.

21 Q. The CFTC against Bradley?

22 A. Yes, I think we touched on that one
23 earlier. That was a false reporting case. The
24 assertion was that these traders had falsely reported
25 trades to a service that compiled trades.

1 Q. Enron we talked about. Internet Law
2 Library?

3 A. Short selling. It was a short-selling
4 case. The assertion was that some people had used
5 short-selling strategies to artificially depress
6 stock prices. I was employed in that case by the
7 plaintiffs.

8 MR. ASCHE: Okay. I have no further
9 questions.

10 MS. DIAMOND: Can we take a brief break?

11 MR. ASCHE: Of course.

12 (Recess)

13 MR. RIDNOUR: Back on the record.

14

15 **EXAMINATION**

16 **BY MR. RIDNOUR:**

17 Q. Dr. Bessembinder, I've got two clarifying
18 questions. Earlier you testified that traders may
19 use Iceberg orders to get a better price. What do
20 you mean by a "better price"?

21 A. So the Iceberg orders, my understanding of
22 the economics and also what I've documented in my
23 study of stock exchange trading in Paris, is Iceberg
24 orders are used to reduce the extent to which the
25 price will run away from your order, so somebody who

1 wants to buy is worried that the price could head up
2 before they can get their buy order executed. So the
3 Iceberg function is used to reduce the extent to
4 which other people know that you have an interest in
5 doing a big buy, and hopefully you can get your big
6 buy done without pushing the price up. So you're
7 doing it to reduce the price impact of your trades.

8 Q. And you also testified earlier that there
9 is no volatility if the price moves one tick at a
10 time. What do you mean by "moving one tick at a
11 time"? And why does that mean there's no volatility?

12 A. So hopefully the record will show that I
13 stated something slightly different than that, and
14 that's that if the price always went up by one tick,
15 that would be no volatility, because volatility is
16 computed around the average. So if it always goes up
17 by one tick, then the average is one tick up. And if
18 it's always up one tick, there's no volatility around
19 the average. So that's what I intended to say.
20 Hopefully that's what the record shows I said.

21 Now, to broaden that a little bit, you
22 could have a market move in one-tick increments and
23 still you have a very volatile market. It depends.
24 So if you have up-and-down moves, you have
25 volatility, and it depends on how many moves there

1 are. It can move in one-tick increments, but if it
2 does that 30 times in a row, you've moved 30 ticks.
3 So, you know, if it goes up 30 ticks in a row and
4 down 30 ticks in a row, it can all be one tick and
5 you could still have a lot of price movement, you
6 could still have a lot of volatility. So the
7 number of one-tick moves is not just directly a
8 measure of volatility at all.

9 MR. RIDNOUR: Okay. That's it for us.

10 MR. ASCHE: That's it for me.

11 Send me the original and one.

12 I'll send it to you.

13 MR. RIDNOUR: Okay.

14 (The deposition was concluded at 12:35 p.m.)

15 * * *

REPORTER'S CERTIFICATE

STATE OF UTAH)
COUNTY OF SALT LAKE) ss.

I, Kathy Morgan, Registered Professional Reporter and Notary Public in and for the State of Utah, do hereby certify:

That prior to being examined, the witness, HENDRIK BESSEMBINDER, was by me duly sworn to tell the truth, the whole truth, and nothing but the truth:

That said deposition was taken down by me in stenotype on December 4, 2013 at the place therein named, and was thereafter transcribed and that a true and correct transcription of said testimony is set forth in the preceding pages;

I further certify that, in accordance with Rule 30(e), a request having been made to review the transcript, a reading copy was sent to the witness for him to read and sign, and the original transcript will be delivered to Mr. Richard Asche for safekeeping.

I further certify that I am not kin or otherwise associated with any of the parties to said cause of action and that I am not interested in the outcome thereof.

WITNESS MY HAND AND OFFICIAL SEAL this
9th day of December, 2013.



Kathy H. Morgan, CSR, RPR

I, HENDRIK BESSEMBINDER, HEREBY DECLARE:
That I am the witness in the foregoing
transcript; that I have read the transcript and know
the contents thereof; that with these corrections I
have noted this transcript truly and accurately
reflects my testimony.

SEE ATTACHED

[illegible]

No corrections were made.

I, HENDRIK BESSEMBINDER, HEREBY DECLARE
UNDER THE PENALTIES OF PERJURY OF THE LAWS OF THE
UNITED STATES OF AMERICA AND THE LAWS OF THE STATE OF
UTAH THAT THE FOREGOING IS TRUE AND CORRECT.

HENDRIK BESSEMBINDER

12/23/13
Date Signed

Case: CFTC v. Moncada, et al.

Case No.: 12-CV-8791

Reporter: Kathy Morgan

Date taken: December 4, 2013

WITNESS CERTIFICATE

I, **HENDRIK BESSEMBINDER**, HEREBY DECLARE: That I am the witness in the foregoing transcript; that I have read the transcript and know the contents thereof; that with these corrections I have noted this transcript truly and accurately reflects my testimony.

Page/Line	Correction	Reason
p. 15, line 1	"lag files" should be "log files"	Transcript is in error
p. 16, line 22 and line 23	"lag files" should be "log files"	Transcript is in error
p. 20, line 4	"reasoning in my analysis" should be "reasoning and my analysis"	Transcript is in error
p. 20, line 12	"Or orders" should be "Orders"	Transcript is in error
p. 60, line 10	"going on" should be "Going in"	Transcript is in error
p. 64, line 5	"older trader" should be "alert trader"	Transcript is in error
p. 79, line 19.	"I'm not sure if there's" should be "I'm not sure. There is"	Transcript is in error
p. 84, lines 1 to 3.	"I shouldn't say beginning of the day since they've pointed the day" should be "I should have said beginning of the day to that point in the day"	Transcript is in error
p. 92, line 12	"by measuring" should be "I measure"	Transcript is in error
p. 93, line 4	"like to look at his buy order, his sell orders" should be "look at his buy orders less his sell orders"	Transcript is in error
p. 94, lines 12 and 13	"that's a value" should be "the absolute value"	Transcript is in error
p. 100, line 25.	"level of crisis" should be "level of prices"	Transcript is in error
p. 101, line 19.	"I traded in" should be "he traded in"	Transcript is in error